

ARTICLE III.

A

DISSERTATION

ON THE

EXCESSIVE USE OF ARDENT SPIRITS.

BY ROBERT THAXTER, M.D.

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*Read at the annual meeting, June 5, 1824.*

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GENTLEMEN,

I PROPOSE to make some remarks on the effects of ardent spirits, and the method of treating those, who indulge in an immoderate use of them. I cannot offer any thing new; but shall endeavour to select such sentiments as accord most with my own.

The effects of intemperance in drinking are immediate and remote, or such as are of a chronic nature.

The immediate effect is drunkenness, the symptoms of which are almost as various as the subjects, and so generally known, that it is unnecessary to de-

scribe them. The first effect of spirit is stimulating, causing pleasurable sensations, and vigour of body and mind with the exception perhaps of judgement and reflection. The last is indirect debility, or exhausted excitability, showing itself by loss of voluntary motion and sense.

The diseases, which are supposed to be immediately caused by a paroxysm of drunkenness, are fearful dreams, hysterics and convulsions, epilepsy, and apoplexy.

The chronic effects of habitual indulgence in ardent or vinous spirit are excitement, and aggravation of every disease, to which the patient is predisposed, and the production of many symptoms, peculiar to those, who so indulge. Such persons are particularly exposed to all acute diseases, as inflammatory complaints and fevers of every description. I think inflammatory complaints are most apt to take place in those persons, who only occasionally indulge and whose constitutions are not much impaired. It has been said, that drunken persons resist contagion, cold, and every exposure more effectually, than sober persons. Though this may be the case during the excitement of intoxication, as soon as that excitement is removed, the system is left more susceptible of the influence of every exciting cause of disease. Dr. Rush says, in the yellow fevers which have visited the cities of the United States, hard drinkers have seldom escaped, and rarely recovered from them. Seamen, &c., who indulge in this way in hot climates,

are said to sicken much more frequently, than those who live temperately. Whenever such persons are attacked with any disease, they are very irritable, and disposed to many nervous affections, as tremors, spasms, watchfulness and delirium. They are much disposed to sweat, and their strength sooner fails, than that of other persons. An old habitual drunkard is usually marked by a bloated or haggard countenance, red nose, inflamed eyes, or eruptions on the face. Acrimonious sores, resembling scalds, on the back of the hands, and phagedenic ulcers on the legs are frequent occurrences among such subjects; and venous plethora almost universal, which is manifested by a disposition to bleed from the nose, hemorrhoidal veins, and even from slight wounds. At the same time that the vessels are crowded with blood, the muscular power, particularly of the heart, is diminished. Though the whole body becomes debilitated the venous and absorbent vessels appear to loose their healthy action, sooner than the arterial.

I might proceed to enumerate a long catalogue of symptoms; but as authors have attributed specific diseases to habitual intemperance, I shall follow their example.

The first and most frequent disease, which presents itself, is dyspepsia. It arises in this, as in most other cases, from a derangement of the functions of several viscera. The stomach received the first impressions of the spirit, and consequently first suffers. After excessive excitement its excitability is exhaust-

ed, and digestion suspended for a time. Frequent repetition of the same cause produces permanent debility of this organ. The liver and other organs, concerned in digestion, sympathise with the stomach, and consequently increase the difficulty. Probably the bile is vitiated also by the quality of the blood, which is carried to the liver. This is the first effect on the digestive organs, and very considerable derangement of their functions may arise, while the organs remain sound. In very aggravated cases, probably some of the organs become diseased.

I believe, it is generally thought, that all the viscera, particularly the liver, of hard drinkers are apt to become inflamed and schirrous, and even the blood vessels to be hardened. These affections are occasioned more readily by distilled spirit, than by other liquors. But Dr. Trotter says, "even the guzzler of small beer has no security against them." My experience however does not confirm this idea, as it regards the stomach. I have had only three clearly marked cases of schirrous stomach, and neither of these persons was considered intemperate. One was a very temperate man. I saw one case, the subject of which was a child. In a review of Cardet, on schirrous stomach it is said, that he thinks spirits very rarely produce the disease. I have seen ossified blood vessels in very temperate subjects. I saw them in one very intemperate person, whose leg was amputated. The arteries were all so far ossi-

fed, that they had lost their contractibility. Fourteen were tied.

I will mention in this place a symptom, which has frequently occurred among my tipping patients. This is diarrhœa. It seems to be something more, than the effect of vitiated and redundant bile, which are common to inebriates. It appears in a chronic form, and is frequently accompanied with a very sore mouth. The tongue is very red, or more pale than natural, clean and moist. I suppose, it commonly arises from a chronic inflammation of the mucous membrane of some part or the whole of the alimentary canal, which possibly sometimes proceeds to ulceration.

Dropsy, diabetes, gout, jaundice, marasmus, impotency, and premature old age are ranked among the diseases of intemperance.

Though the body suffers so much, the mind suffers as much, or more. Its effects are every day seen among habitual drunkards in erroneous judgment, insensibility and fatuity. Perhaps no cause produces so many cases of Cullen's *Vesania*, as intemperance. Dr. Rush says, one third of the maniacs in the Pennsylvania hospital had their disease produced by ardent spirits. The proportion in the asylum at Charlestown has not been so great. Dr. Wyman informed me, that of three hundred and three patients, received into the asylum, the insanity of twenty-eight was supposed to have been produced by this cause.

The foregoing diseases are common to all. There are some, which are peculiar to inebriates.

The first of these, which I shall notice is described by Dr. Jackson, under the title of *Arthrodynia a potu*. I have never seen a well marked case, though several which approach it. I shall therefore give the description in the Doctor's own words.

“This arthrodynia comes on gradually. It commences with pains in the lower limbs, but especially in the feet; and afterwards extends to the hands and arms. The hands may be affected first in some instances; and in all cases in an advanced state, the pain is more severe in the feet and hands, than in the upper parts of the limbs. The pain is excruciating, but varies in degree at different times. It is accompanied by a distressing feeling of numbness. After the disease has continued a short time, there takes place some contraction of the fingers and toes, and an inability to use these parts freely. At length the hands and feet become nearly useless, the flexor muscles manifesting, as in other diseases, greater power than the extensors. The whole body diminishes in size, unless it be the abdomen, but the face does not exhibit the appearance of emaciation common to many visceral diseases. This diminution is especially observable in the feet and hands; and at the same time the skin of these parts acquires a peculiar appearance. The same appearance is sometimes noticed, in a slighter degree, in the skin of other parts. This appearance consists in a great

smoothness and shining, with a sort of fineness of the skin. The integuments look as if tight and stretched without rugæ or wrinkles, somewhat as when the subjacent parts are swollen; but the skin is not discoloured. Yet in this disease there is not any effusion under the skin, and the character, which this assumes, arises from some change in the organ itself. A similar appearance may sometimes be seen, I think, in cases of paralysis. It may arise perhaps from similar causes in the two diseases; for in this arthrodynia there is a partial paralysis. But here the paralysis is to be referred to some affection of the muscles, and not to the nerves, as in common paralytic cases.

“The most characteristic symptoms of this disease are manifested in the limbs; but the pain is not limited to these, and other symptoms are exhibited in other parts. The pain sometimes shoots suddenly up one or both legs, and in one case it frequently passed up the back and then forward to the pit of the stomach, taking the course of the diaphragm. The functions of the stomach are always impaired, and generally very much. The appetite is lost, or is morbid, the patient craving only the most powerful stimulants; the food is often rejected, and constipation or diarrhœa take place. The mind is weakened; but it is free from delirium ordinarily, and is alive to the horrible sufferings of the disease. Sleep is prevented by pain and is procured only by opiates.

“In the progress of the disease spasmodic affections often ensue, and both mind and body are liable to be disturbed and agitated by slight causes. The powers of life at length are exhausted and delirium perhaps occurs at last as a precursor to dissolution.”

Dr Lettsom, describes symptoms much like the foregoing. After relating a number, he says, “the lower extremities grow more and more emaciated, the legs become as smooth as polished ivory, and the soles of the feet even glassy and shining, and at the same time so tender, that the weight of the finger excites shrieks and moaning; and yet I have known that in a moment’s time heavy pressure has given no uneasiness. The legs, and the whole lower extremities, loose all power of action. The arms and hands acquire the same palsied state.”

The last disease which I shall name, has been denominated *Delirium tremens*, *Delirium vigilans*, brain fever of drunkenness, &c. Doctors Sutton and Armstrong have described the disease very fully. To these authors I refer for a minute description.

The attacks of this disease are usually moderate and after the sudden disuse of spirit. Sometimes sudden, and when the use of spirit has not been discontinued. The disease usually occurs in habitual drunkards. Sometimes in those, who have never or very seldom been intoxicated, and who have used spirit improperly only a short time. It has been produced by immoderate use of opium, and by other



stimulants, as Sulphuric Æther, &c. It generally commences with the ordinary symptoms of fever. Sometimes with cholera or an epileptic fit. Frequently after wounds and other diseases.

The most characteristic symptoms are delirium of a peculiar cast, tremors of the whole body, but particularly of the hands, sweating and watchfulness. There is some disagreement, which of the latter is most characteristic and frequent. Dr. Sutton says, tremor stands first, and sweating next. Dr. Hayward says, I think with truth, watchfulness stands first. This latter symptom is so constant, that a return of sleep is by all considered a presage of recovery.

The most unfavourable signs, according to Dr. Armstrong, are "indications of coma or convulsions; perpetual watchfulness; excessive irritation; violent and often renewed struggles; very rapid and thready pulse; frequent vomiting; extremely cold skin; subsultus tendinum; and especially small contracted pupils with a degree of strabismus."

I said *Delirium vigilans* was the last disease, I should name. It is proper, however, to notice spontaneous combustion. It has been doubted, whether this event ever occurred; but several well attested cases are related, and I find, it has been introduced into a late nosology.

I do not clearly comprehend, how alcohol produces its effects on the system. The immediate effect is an unnatural stimulus on the stomach. Whether

the heart sympathizes with the stomach, and endeavours to expel the enemy from the system, or whether the alcohol is taken up unassimilated by the lacteals, and carried directly to the blood, thereby causing the blood to be unnaturally stimulating to the heart, I am not furnished with facts sufficient to determine. The fact, that certain substances pass off very quickly by urine, warrants the conclusion, that alcohol may be absorbed. The hydrogenous gas, which escapes from the lungs of inebriates, which discovers itself by its feter, and which is said to have taken fire, confirms the same supposition. Dr. Trotter says, "when a large quantity of ardent spirits is swallowed at once, it acts so suddenly on the stomach, and by consent with the whole nervous system, that the common phenomena of ebriety do not take place. It approaches at once to the most dangerous point, for the man often falls down insensible as soon as he has finished his draught." He also says, the arterial blood of inebriates approaches nearer to venous blood, than that of temperate persons. If so, this will account for many of the symptoms of inebriates: for we all know, if any organ be supplied with venous blood only, its functions will soon cease. Though either of these hypotheses will account for a morbid action of the heart, neither explain, why the blood is sent particularly to the head. The unnatural fulness of the veins, observable in drunkards, will partially ac-

count for the effect on the brain. Allowing this congestion does not exist in a greater degree in the brain, than elsewhere, it will produce much derangement of its functions. The symptoms of delirium vigilans depend principally on this cause. But it is not so easy to determine, whether the functions of the brain are impaired by venous congestion, by sympathy with the stomach, or by inflammation. Probably venous congestion is the principal and most frequent cause, sympathy next, inflammation seldom. Dissections prove, that in this disease there is congestion of the brain and liver, and sometimes effusion of serum in the cavities of the brain, and between it and the membranes.

In the treatment of all diseases I was early taught to attend to the peculiarities of each patient, to the habit and mode of living, as well as to the natural temperament of the subject. It is always useful to keep a proper balance of action and reaction in the vessels, and an excitement proportioned to the excitability. There is a certain state of excitement, which promotes regular action of all parts of the body, beyond or short of which the functions of some part will be deranged. This idea is more necessary to be kept in view in the treatment of inebriates, than of any class of patients whatever. All parts of the system of intemperate persons act less uniformly and regularly than those of temperate. There is more exhaustion of excitability: consequently more danger of that collapse or torpor, which so fre-

quently follows extreme excitement. The proper course to be pursued with persons, addicted to the use of ardent spirits, must of course vary very much according to the state of the subject, and the intent to be answered.

If the object be to abolish the habit of drinking, the first thing to be done must be to engage the resolution of the patient to abandon his cup. Writers recommend many expedients, as exciting counter passions, painful associations, &c.; but they all tend to the same point, that is, strongly to affect the mind. The disposition, situation, and particular cause of each case must be studied, and the arguments adapted accordingly. In a few cases, where the desire to drink arises from bodily indisposition, it may be removed by removing the disease. After the resolution to abstain is established, or when the patient can be controlled, it is a question, what method is best to be pursued.

If the person enjoy tolerable health, there can be no doubt of the propriety of abstaining at once, and altogether, from spirit of every kind, and I think from all stimulants. Few persons have resolution sufficient to taste a little, and stop at a proper quantity. The very tasting gives an inclination for more. As Dr. Rush says, "Taste not, handle not, touch not," should be inscribed on every vessel, that contains spirit, in the house of a man, who wishes to be cured of habits of intemperance." If the constitution be not very much impaired, and the tone of the

stomach nearly destroyed, nature will very soon restore the healthy action of all the viscera. If the constitution be very much impaired, some stimulus must be allowed; but it had better be any thing in the form of medicine, than spirit or even wine. Bitters, infused in water, may be substituted, and sometimes opium may be necessary. The diet should be regulated according to Dr. Lettsom's method, which is this: "The patient should be allowed to fix upon some one species of nutriment; and whatever it is, should be confined to it alone, and that in the smallest quantities possible, and at regular stated distances, that the preceding portion may be properly digested, before any addition be allowed: when the stomach has thus acquired more tone, either some new, or an increase of the former nutriment, may be admitted." If the stomach be not much impaired, it will not be necessary to adopt so strict a course. If it be very much indeed, it may be necessary to add to this a course of stimulants, as before suggested.

If, on the contrary, a person be attacked by a violent disease, or be severely wounded, especially if he be an old drunkard, and his constitution much impaired, I think it dangerous to deprive such a person of his accustomed beverage at once. Nature, under such circumstances, may sometimes be able to overcome the disease, and the debility, consequent upon a deprivation of the accustomed stimulus; but she will much oftener sink under the

exertion. It has been said, that in the Almshouse of Boston, and in the State Prison, where drunkards of every degree are admitted, and immediately deprived of spirit, no death has taken place in consequence. I do not doubt the correctness of this assertion, as it respects subjects, whose constitutions were not very much impaired; but, if the same treatment be given to all such subjects, who are admitted, labouring under other diseases, than those caused by inebriation, I strongly suspect, many, who have died of those diseases, might have been cured. I am confident, I should have lost many patients, who have recovered, if I had not allowed some spirit, or substituted some other stimulant. Generally some substitute may be used; but in some instances nothing will answer but a portion of the old beverage. Opium appears to be particularly salutary in all diseases of inebriates, and may commonly be substituted for spirit. In the treatment of all diseases of inebriates, particular regard to the stomach is very necessary. This organ sympathizes so much with every other organ, that, if it be deprived of its accustomed stimulus, the whole system suffers, and the patient will many times sink under the evacuations, absolutely necessary to remove the disease. If the blood vessels be crowded, or there be local inflammation, blood must be drawn. Owing to the disproportion between the power of the heart, and the load to be moved, frequently it may be necessary to lessen the quantity of blood, when the pulse

does not indicate it. If impurities of any kind be accumulated in the first passages, they must be evacuated by emetics or cathartics. At the same time a proper stimulus must be kept on the stomach. It had frequently best be done by the article, to which the patient is most accustomed. I think, by this method, I have frequently prevented many nervous affections, and sometimes delirium vigilans. I have known sleep produced, when the latter disease has been threatened, by a decoction of motherwort, leonurus cardiaca, and a portion of spirit, more readily than by opium. In all cases, however, the quantity of spirit must be diminished, and in all those diseases, which arise solely from its abuse, it must be abandoned very soon. Without its abandonment very few recover. With it very few fail to recover. A good general rule to be observed in the use of spirit, is to mark the effect produced by its use and disuse. If the appetite improve, and the system become more calm by abstinence, it must be abandoned. If, on the other hand, the patient sink, and become more irritable, recourse must be had to it again.

Having said so much on the general treatment of inebriates, it will not be necessary to say much on the treatment of particular diseases. Nearly all the diseases, which have been named, are common to other persons, and receive the same treatment which they do in other persons, modified according to the peculiar habit of the patient.

It is proper to say something on the method to be pursued during a paroxysm of intoxication. First, the head and shoulders must be elevated, and all obstacles to free respiration and a free return of blood from the head must be removed. The contents of the stomach must next be discharged by an emetic, or tickling the fauces. The head should be cooled by rubbing it with cold water, &c. If these do not restore the patient, and he be very insensible, especially if the respiration be stertorous, bleeding will be necessary. The efficacy of this remedy has been doubted. I have never had occasion to bleed except once; then it was decidedly useful. Plunging the whole body into cold water, producing profuse sweat, terror and anger have all removed drunkenness.

Not having seen a well marked case of the disease, quoted from Dr. Jackson, I must also quote his treatment.

He says, "I have employed various remedies, of which the following only appear to have been useful."

"First, abstinence from spirituous liquors of every kind, either in the form of medicine, or in any other form. The effect of this abstinence is gradual, but it is so great, that it is difficult to say whether the remedies to be mentioned after this, have not appeared more useful than they really were."

"Second, opium in sufficient quantities to relieve the pain at night and procure sleep. For this pur-



pose several grains have been necessary at first, in some cases ; but in the course of a few weeks the dose being gradually diminished, the opium may be omitted entirely. It is important to do this as soon as possible."

"Third, warm bathing, friction, and other gently stimulating applications to the skin."

"Fourth, the regulation of the stomach and bowels in such manner, as the circumstances of each case may indicate. I believe that, when there is any appetite, animal food is generally most useful."

Delirium tremens has caused some disagreement respecting its cure. The disagreement appears now as much about particular remedies, as general principles. According to Dr. Sutton, the disease must have been much more severe in his vicinity, than I have ever seen it, or the treatment very unsuccessful. He thinks, by the mode of proceeding, usually adopted previously to the method recommended by him, the average of recoveries was not more than one in three. This mode appears to have been strictly antiphlogistic under the idea, that the disease was phrenitis.

Dr. Sutton depends almost entirely upon opium : though by his cases it appears, evacuations were made prior to the use of opium. Most of his patients lost blood in the early stage of the disease, and all, who lost blood, recovered. Of seven, who were not bled, three only recovered, and of these three

two had been sick several days of other diseases, before they were attacked by this. Notwithstanding this fact he observes, "in a very early stage of the paroxysm, if in a plethoric subject, blood may be drawn; but I do not recommend to the practitioner to wait to see the effects of it, with a view of repeating the operation, as thereby the life of the patient may be endangered. I should advise in such instances, after bleeding that recourse be had to the use of opium in the manner pointed out in the cases, and pursued to the extent required, as the sole remedy for this disease," that is, "of inducing rest and tranquillity ending in sleep." He also says, "I do not judge bloodletting to be absolutely necessary in any case of this disease, when the paroxysm is formed; but I cannot say, that its use has rendered the employment of opium less successful in its cure; therefore the practice may be employed, when strong evidence of plethora exists. I have found opium so capable of relieving all the symptoms, as to want no aid, and therefore, if the disease has continued some days, I should not be inclined to lose time by employing other remedies." On purgatives he also says, "I must first remark, that they are not a cure for the disease, though the use of them in this disorder may aid the effects of opium, and a pertinacious state of costiveness may retard its salutary operation. The bowels should therefore be attended to in every proceeding in the cure of this disease.

But it is not so much consequence to wait for the operation of the bowels, as to delay the use of opium. Purgatives therefore may be given in conjunction with this remedy : and when the symptoms remit considerably, and the bowels have not become open, the use of opium may be suspended for a little time to favour the operation of cathartics, and again resumed as occasion may require." Whether by administering opium very early, the most dangerous part of the disease might not be prevented, Dr Sutton is undecided. He was "cautious not to exhibit opium in the manner stated, except in such cases as appeared to be decidedly delirium tremens."

Dr. Armstrong considers evacuations more necessary, than Dr. Sutton, and does not depend so much on opium. He varies the treatment according to the energy of the constitution. He cautions against the use of opium in large doses till, the first passages have been thoroughly evacuated, especially in robust subjects. He says, however efficacious opium may be under judicious management, I have seen and heard enough to be fully convinced, that it is a very perilous practice to administer it in too large and repeated doses." He thinks bleeding not often necessary ; but that it may frequently be used advantageously in the early stage of the disease. He thinks cathartics absolutely necessary, and in some instances that they must be frequently repeated. He observes, "when the bowels have been suffi-

ciently evacuated about two or three gallons of tepid water strongly impregnated with salt should be dashed over the whole skin, which ought to be immediately dried, and well rubbed with warm flannels. After this operation the patient should be put to bed, and about forty or fifty drops of tincture of opium exhibited in a little warm wine, and repeated at the interval of two or three hours, provided sleep be not in the mean time procured. If this do not restore the patient, he begins with two or three grains of calomel with a grain and a half of opium every six or eight hours, lessening the quantity of opium after the first day, and continues this course till the action of the calomel is discovered in the mouth. At the same time he repeats the tepid affusion three or four times in a day, if occasion require. He recommends some of their usual drink to very debilitated subjects. For robust, vigorous patients he recommends cold affusion. In advanced stages of very bad cases he says, "every species of depletion is of course out of the question. Under the most unpromising appearances a combination of calomel and opium will sometimes succeed; and whenever there is ground for doubting the propriety of evacuations, it should be administered in preference to every other expedient."

The general plan of treatment recommended by Armstrong corresponds more with my ideas, than any thing I have met with: unless it be Dr. Hay-

ward's remarks in the N. E. Journal of Med. and Surg. for July 1822. He there recommends more free evacuations, particularly by the lancet. I have never seen the disease treated according to the extreme of either a stimulant or antiphlogistic plan. Very early in life I saw it treated successfully upon the general principle of treating inebriates. At the commencement, if evacuations had not been used for other symptoms, evacuations were always made. The kind was chosen by the particular circumstances of each case. If the patient was young, or the blood vessels crowded, venesection was always resorted to. As the disease is generally accompanied with some symptoms indicative of impurities in the stomach and bowels, emetics and cathartics, one or both, were used according as nausea or constipation of bowels was most urgent. But under the idea, that the affection of the mind arose principally from sympathy with the stomach, some stimulant, and generally with it opium, was administered immediately after. This usually produced sleep and a mitigation of the delirium. If the patient was much debilitated, evacuations were less freely used, or, if any symptoms existed, which indicated evacuations, the debility, or more properly the collapse, produced thereby, was met by an additional quantity of stimulus.

By adopting this method the progress of the disease may very commonly be arrested. Evacuations

and anodynes may be alternated several days with advantage. In all instances the usual quantity of spirit must be diminished, and, as convalescence takes place, may be dropped altogether. If opium be used, it may be omitted very early. Though opium be very salutary in this disease, as it has produced it, we may conclude, that it acts much like spirit on the system, and that it must be omitted gradually, and as soon as possible. Restraint must be avoided if possible. A little management will generally keep the patient within bounds; but if it be necessary to resort to force, it must be effectual. The strait jacket had better be used at once.

I have never seen the tepid or cold affusion used: therefore I can say nothing of their utility. Blisters are generally condemned. I have seldom used them, or seen much effect from them.

Though I have taxed your patience so much, gentlemen, before I dismiss the subject, I wish to remind the younger part of my brethren in the profession, that country physicians are peculiarly exposed to temptation, and that a considerable proportion of those, who have practiced till they were advanced in life, have indulged too freely in the use of spirit. Let me therefore advise you religiously to abstain from all intoxicating liquors, while visiting your patients.

*Note.*—Since this dissertation was read two cases of Delirium Vigilans have fallen under my care, in

which opium was very freely used, and which in a degree corroborate the opinion of Dr. Sutton, that opium must be used to the extent of producing sleep, and that sometimes it must be given in large quantity to produce that effect.

The first patient had taken an emetic and cathartic at the commencement of the disease, and afterwards opium in doses of two grains, repeated two or three times at intervals of an hour every day. Notwithstanding this he slept none during four days. At twelve o'clock in the night of the fourth day, after having taken in the evening six or eight grains of opium, he took two hundred drops of tincture of opium at once, and was allowed to walk some time bare headed in the open air. This calmed him a little. After this two doses of one hundred drops, and one of two hundred were given before four o'clock, and at this time four about grains of opium. In the course of two hours he began to sleep, and slept considerably during the day, at first short unquiet naps, which became longer and more quiet. By the sixth day from the attack he had become nearly rational.

The other patient at the commencement cut his throat, and lost from three to four pounds of blood. Tincture of opium in doses of fifty or sixty drops, repeated at longer or shorter intervals, was administered without good effect the two first days. At this time two hundred drops were given at a dose.

and one hundred repeated every half hour, till he had taken five hundred. He then began to dose, and from that time became more rational.

Both these patients rubbed their faces and breasts, as though they itched badly, after they had taken a large quantity of opium, and before any other evidence of its effect was discovered.

THE END.